direction of lay,

[wherein said pitch of all the layers varies from a maximum P_{max1} (1000 cm) and P_{max2} (1000 cm) in the intermediate layers and a P_{min1} (2 cm) and P_{min2} (2 cm) in the external layers, while the twist of the tapes in all of the layers varies from α_{max1} (45 degrees) to α_{min1} (0 degrees) and from α_{max2} (45 degrees) to α_{min2} (0 degrees) in at least one of the layers of tapes placed between the external surface of the core and the internal part of the layer, being the current distribution between the layers uniform and each cable layer operating at total current conductance.]--

IN THE CLAIMS

Please amend the following claims:

12) (currently amended) A flexible superconducting core for a superconducting power cable, said core comprising:

a) a helical [externally] central corrugated flexible tubular element [comprised] made of stainless steel;

b) a stainless steel core mesh positioned around [said] a helical central corrugated flexible [central core] tubular element to provide a relatively flat surface, said mesh consisting of:

i) a first layer of steel tape of one size; and

ii) a second layer of steel tape having a different said size from said first layer of said steel tape, said [first] second layer being positioned over said [second] first layer;

c) a layer of at least one copper tape, positioned on top of said second layer of said

steel tape;

d) a plurality of superconducting tapes layered over said at least one said copper tape, forming a first group of a plurality of superconducting tape layers;

e) a second group of a plurality of superconducting tape layers, at least one said layer of said second group positioned on top of said first group of plurality of - [suberconducting] superconducting tapes being wound in one direction opposite that of (d); and

wherein a pitch of all the layers varies from a maximum P_{max1} [(1000 cm)] and P_{max2} [(1000 cm) in the intermediate] medium layers to minimum [and a] P_{min1} [2 cm)]and P_{min2} [2 cm) in the external] in inner and outer layers layers, while [a] twist angles of the tapes in [all of] the layers [varies] vary from α_{max1} [(45 degrees) to α_{min1} [(0 degrees)] and from [α_{max2} (45 degrees)] α_{max1} to α_{min2} [(0 degrees) in at least one of the layers of tapes placed between the external surface of the core and [the] an internal part of the layer, being the current distribution between the layers uniform and each cable layer operating at total current conductance] and at least one layer of tapes from normally conducting metal is located between the outer surface of the former and the inner surface of said layer,

wherein:

a) for inner layers:

i) P_{min1} and α_{max1} is defined as minimum pitch and maximum twist angle of said tapes in the first layer made of superconducting tapes from the cable axis:

ii) P_{maz1} and α_{min1} is defined as maximum pitch and minimum twist angle of

said tapes, the last layer from the cable axis layer made of superconducting tapes of the part of layers adjacent to the former and having one direction of lay; and

b) for outer layers:

P_{min2} and α_{max2} is defined as minimum pitch and maximum twist angle of tapes in the first layer made of superconducting tapes from the cable axis; and

P_{max2} and α_{min2} is defined as maximum pitch and minimum twist angle of tapes in the first layer from the cable axis layer made of superconducting tapes of the second part of layers with opposite direction of lay.

13) (currently amended) The flexible [conductor] superconducting core according to claim [1] 12, wherein said flexible tubular corrugated element has an external diameter of preferably between 4 and 6 cm, an internal diameter between 2 and 4 cm, a corrugation depth ranging between 0.5 cm and 1 cm, and a corrugation pitch between [1.6 and 3] 0.8 and 1.5 cm.

14) (currently amended) The flexible [conductor] superconducting core for claim [1] 12, wherein the stainless steel tape for said first layer has a width ranging between 4 cm and 5 cm and a thickness between 0.005 to 0.006 cm and spacing ranging from 0.15 to 0.2 cm and the second layer of stainless steel tape is applied which has a width ranging from 2.5 to 4 cm and a thickness ranging from 0.001 to 0.002 cm with a spacing ranging from 0.1 to 0.15 cm.

15) (currently amended) The flexible [conductor] superconducting core [for a superconducting power cable] according to claim 1, wherein the [tubular element consists of a] first

layer of copper tapes [with] has a width ranging from 0.25 cm to [4.0] .40 cm and a thickness ranging from 0.025 to 0.030 cm with a laying length ranging from 2 to 100 cm.

16) (currently amended) The flexible [conductor] superconducting core [for a superconducting power cable] according to claim [1] 12, wherein said core operates with a current selected from the group consisting of direct current, alternate current, current pulses and combinations thereof.

17) (currently amended) The flexible [conductor] superconducting core [for a superconducting power cable] according to claim 1, wherein said [superconducting] tapes of copper are made from the group consisting of metals and alloys with low electric resistance based on a metal selected from the group consisting of aluminum, copper and silver.

18) (previously canceled)

19) (cancel)

20) (previously amended) The [flexible conductor] superconducting core [for superconducting power cable] according to claim 1, wherein said superconducting elements of the flexible conductor core to be used may be a shape selected from the group consisting of flat, round oval and a sector.

RESPONSE

This is in response to the Office Action of [March 21] September 23, 2003.

Applicant have amended all claims, but claim 19 is canceled.

Certain changes were made in the specification. However, no new matter was added. Typos mentioned in the specification were corrected

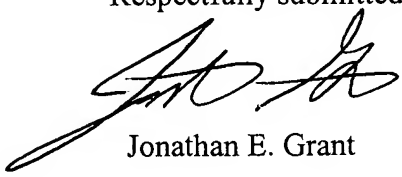
Applicants do note, however, that the final action was premature, as substantive issues had not been raised or argued by the Office, or by the applicant. Not every second Office Action need be a Final Office Action.

The patent application is now in condition for allowance.

Please call or fax the undesigned at (301) 603-9071 if you have any questions or comments.

Thank you.

Respectfully submitted,



Jonathan E. Grant

Reg. No. 34,830

2107 Hounds Run Place
Silver Spring, Maryland 20906